Version: January 21, 2020

Biological Evaluation Form

Deepwater Horizon Oil Spill Restoration

U.S. Fish and Wildlife Service & National Marine Fisheries Service

This form will be filled out by the Implementing Trustee and used by the regulatory agencies. The form will provide information to initiate informal Section 7 consultations under the Endangered Species Act (ESA) and may be used to document a No Effect determination or to initiate pre-consultation technical assistance.

It is recommended that this form also be completed to inform and evaluate additional needs for compliance with the following authorities: Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA) and Section 106 of the National Historic Preservation Act (NHPA).

Further information may be required beyond what is captured on this form. Note: if you need additional space for writing, please attach pages as needed.

For assistance, please contact the compliance liaisons
USFWS: Erin Chandler at erin_chandler@fws.gov
NMFS: Christy Fellas at christina.fellas@noaa.gov

A. Project Identification

Federal Action Agency(one or more):USFWS ☒ NOAA ☒ EPA ☐ USDA ☐

Implementing Trustee(s): The Louisiana Coastal Protection and Restoration Authority (CPRA)

Contact Name: Chris Barnes Phone: 225-342-9036 Email: Chris.Barnes@la.gov

Project Name: PO-163 Golden Triangle Marsh Creation Project

DIVER ID# Click to enter text TIG: Louisiana TIG Restoration Plan # Click here to enter text

B. Project Phase and Supporting Documentation

Please choose the box which best describes the project status, as proposed in this BE form:

Planning/Conceptual ☐ Construction/Implementation ☐ Engineering & Design ☒

If "Engineering & Design" was selected, please describe the level of design that has been completed and is available for review:

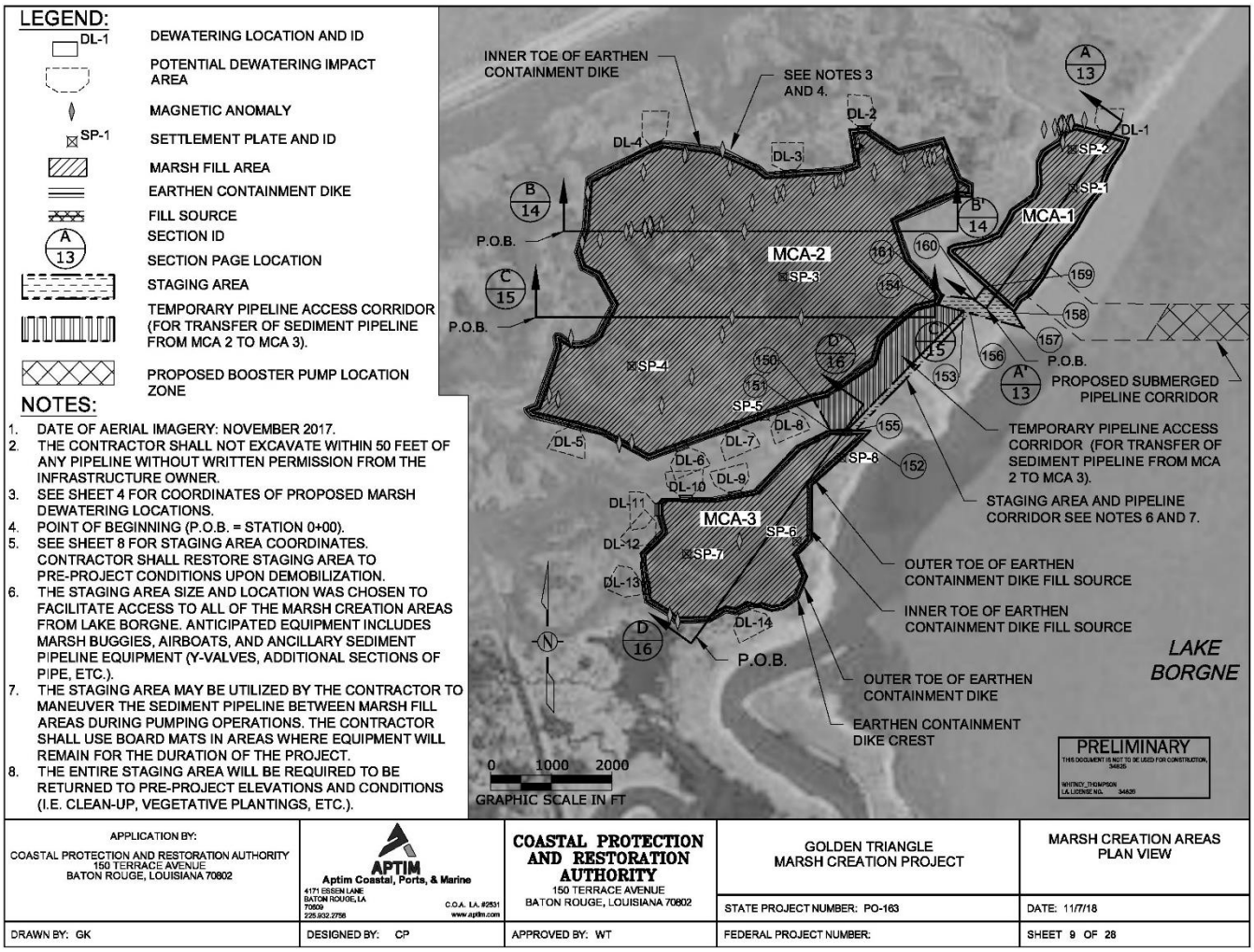
The Final 30% Design Report was completed in November 2018. The project is currently in the 95% Design Phase.

Supporting Documentation

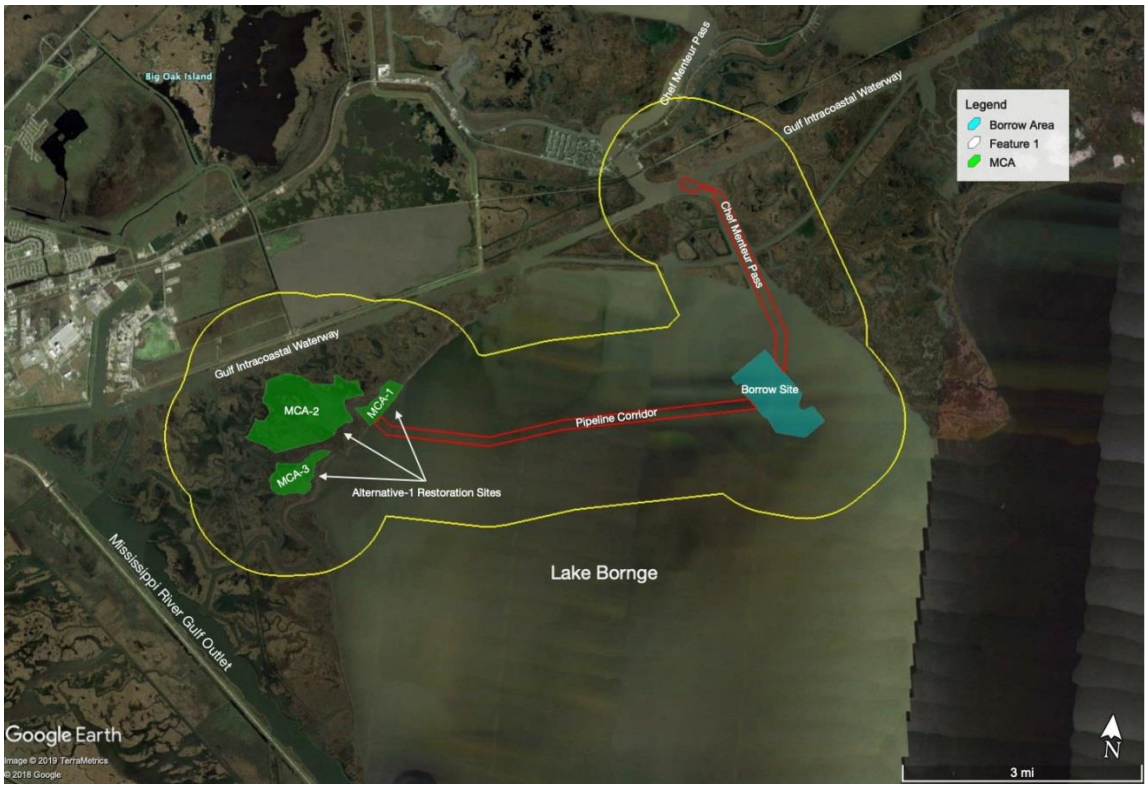
Please attach any maps, aerial photographs, or design drawings that will support the information in this BE form. Examples of such supporting documentation include, but are not limited to:

Plan view of design drawings
Aerial images of project action area and surrounding area
Map of project area with elements proposed (polygons showing proposed construction elements)
Map of action area with critical habitat units or sensitive habitats overlayed

Preliminary Permit
Plats 8.1.19.pdf



Preliminary Permit Drawing for the Golden Triangle Proposed Project, see also all embedded drawings.



Aerial image of Action Area.

C. Project Location

I. State and County/Parish of action area

The Golden Triangle Marsh is a narrow band of brackish marsh located directly east of New Orleans between Lake Borgne and the confluence of the Mississippi River Gulf Outlet (MRGO) and the Gulf Intracoastal Waterway (GIWW), on the western shore of Lake Borgne and lies in both St. Bernard and Orleans Parishes, Louisiana. The marsh creation areas are located in Orleans Parish, while the borrow area and pipeline corridor are located in Lake Borgne which is in St. Bernard Parish.

II. Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83)

[online conversion: https://www.fcc.gov/encyclopedia/degrees-minutes-seconds-tofrom-decimal-degrees]

Latitude/Longitude = 30.016622°N, 89.862363°W NAD833 - X= 3746352.1 Y= 554525.1 (NAD 83 Louisiana State Plane, South Zone, U.S. survey feet)

D. Existing Compliance Documentation

NEPA Documents

Are there any existing draft or final NEPA analyses (not PDARP/PEIS) that cover all or part of this project?

YES☒ NO☐

Permits

Have any federal permits been obtained for this project, if so which ones and what is the permit number(s)?

YES☒ NO☐ Permit Number and Type: P20170705 LDNR/OCM Permit authorized 08/10/2017; MVN201701015EV - US Army Corps of Engineers authorized 11/06/2017; C.U.P. No.: P20181324 received August 14, 2019

Have any federal permits been applied for but not yet obtained, if so which ones and what is the permit number(s)?

YES☒ NO☐ Permit Number and Type:

If yes to any question above, please provide details in the text box (i.e. link to the NEPA document, or name of the document, year, lead federal agency, POC, copy of the permit or permit application, etc.). This is needed to check for consistency of the project scope across different sources and to facilitate the NEPA analysis. If you do not have a link, email the documents to the TIG representative for the Trustee designated as lead federal agency for the restoration plan.

Click here to enter text.

Mississippi River Gulf Outlet (MRGO) Ecosystem Restoration Final Environmental Impact Statement. 2012. New Orleans District US Army Corps of Engineers. https://www.mvn.usace.army.mil/Portals/56/docs/environmental/MRGO/MRGOEcosystemRestorationFinalEnvironmentalImpactStatementJune2012compressed.pdf

Joint Permit Application submitted December 17. 2018 to OCM/USACE; signed C.U.P. No.: P20181324 received August 14, 2019. See imbedded permit. USACE NO district will issue a programmatic General permit (PGP) for Biloxi and Golden Triangle Proposed Projects.


Joint Permit Application
For Work Within the Louisiana Coastal Zone


COASTAL USE PERMIT/CONSISTENCY DETERMINATION

Aptim Environmental & Infrastructure, Inc. (APTIM). 2019. Golden Triangle Marsh Creation Project (PO-163) Draft Environmental Assessment, Baton Rouge, LA: APTIM Environmental & Infrastructure, Inc. (Prepared for Coastal Protection and Restoration Authority of Louisiana). See embedded document.

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TIG RP/EA is currently being drafted and will be reviewed by the LA TIG several times prior to finalization of the document.

Any documentation or information provided will be very helpful in moving your project forward.

Name of Person Completing this Form: Tony Martin, Meggan Dugan and Caitlin Glymph
Name of Project Lead: Vida Carver
Date Form Completed: 12/5/2019
Date Form Updated: 1/24/2019

E. Description of Action Area

Provide a description of the existing environment (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the action.
If CH is not designated in the area, then describe any suitable habitat in the area

a. Waterbody

If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If applicable, please describe water quality, depth, hydrology, current flow, and direction of flow.

The Proposed Project restoration areas are located on the western shore of Lake Borgne, in Orleans Parish, LA. The sediment borrow site, booster pump and pipeline corridors are located within Lake Borgne in St. Bernard Parish (See Action Area figure provided in Section B). The Action Area is shown with a 1-mile buffer zone extending around the restoration sites, the borrow areas, and pipeline corridor. The waters around the restoration area and the western terminus of the conveyance corridor would include the estuarine portion of the Bayou Bienvenue from the Mississippi River Gulf Outlet (MRGO) to Bayou Villere (subsegment 042004) (LDEQ 2004). Water depths in the marsh creation area vary, with water bottoms typically being less than 1 foot below the water surface (NAVD88). The conveyance corridor, borrow area, and the southern portion of the access corridor are in Lake Borgne (subsegment 042001), which is an estuarine coastal lagoon, with depths near the project area ranging from 6 to 10 feet. The northern portion of the access corridor is in Chef Menteur Pass and the Gulf Intracoastal Waterway (GIWW), which is an estuary that includes a hurricane protection levee (subsegment 041702). The Proposed Project action area is located within SFHAs subject to inundation

by the 1 percent annual flood chance (i.e., 100-year flood zone). The marsh creation area, areas north of the conveyance corridor and borrow area, and the access corridor are within a SFHA Zone VE, with BFEs ranging from 17 to 24 feet (FEMA 2016).

The water quality of the action area is heavily influenced by saline water inputs through tidal exchanges (USGS 2002). The marsh creation area has experienced changes in salinities and hydrology from loss of wetlands, freshwater inputs (primarily rainfall), and saline inputs from Lake Borgne, which is heavily influenced by saltwater inputs from the Mississippi Sound and freshwater inputs from the Pearl River (USGS 2002). Bayou Bienvenue (subsegment 042004), which lies to the south of the marsh creation areas, fully supports PCR, SCR, and FWP. However, this subsegment does not fully support OYS due to the presence of fecal coliform from wildlife and other waterfowl sources and was placed on 2018 303(d) List of Impaired Waterbodies (LDEQ 2019). Lake Borgne fully supports PCR, SCR, FWP and OP, and the Bayou Sauvage segment crossed by the alternative fully supports PCR, SCR, and FWP.

Salinity levels within Lake Borgne are indicative of brackish surface water. Water quality measurements were collected in 2018 from 38 locations in and around the borrow area in Lake Borgne at depths of 1 to 10 feet. These samples revealed salinity concentrations in Lake Borgne ranging from 2.79 to 2.85 parts per thousand (ppt) (LDEQ 2017), while the nearest Coastwide Reference Monitoring System (CRMS) station (CRMS 3650) to the project area recorded salinities between 0.20 and 16.89 ppt between 2007 and 2019 (CPRA 2019). Dissolved oxygen concentrations in Lake Borgne ranged by depth from 7.34 to 6.84 mg/L, which exceed estuarine water quality standards of 4 mg/L. Turbidity levels in the lake, which range in depth from 5.72 to 8.91 FNU, are well below the maximum guideline level for estuarine lakes, as defined by LDEQ water quality standards, of 50 NTU.

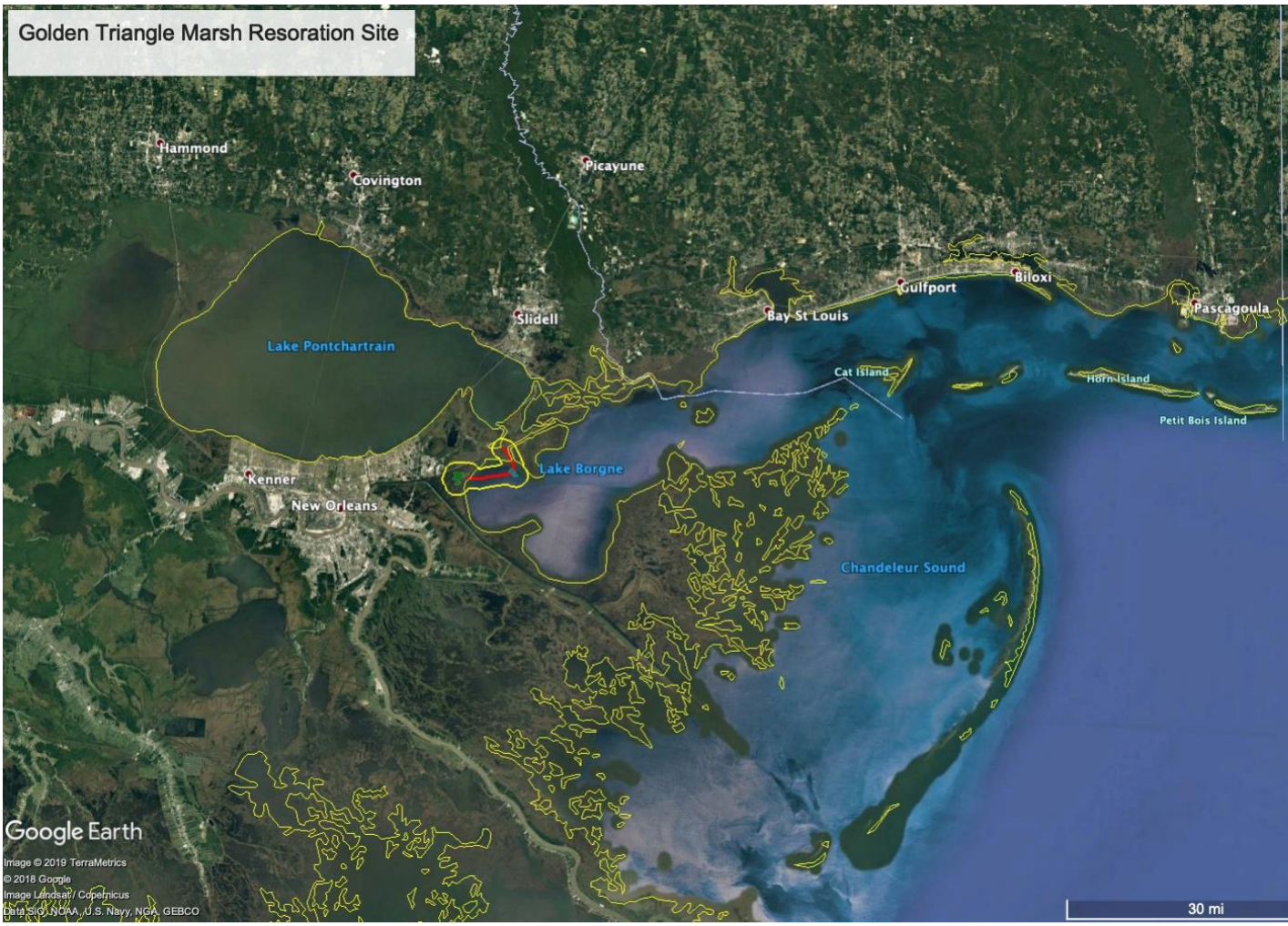
The restoration sites contain brackish marsh habitat consisting mixed stands of smooth cordgrass (*Spartina alterniflora*) and marsh hay cordgrass (*Spartina patens*) and scattered discontinuous patches of Black mangroves (*Avicennia germinans*) [Engineering and Design Services (PO-163) Final 30% Design Report (APTIM 2018b]).

Does the project area include a river or estuary?

YES☒ NO☐

If yes, please approximate the navigable distance from the project location to the marine environment.

The Proposed Project is located within estuarine waters of Lake Borgne, approximately 40 nm (74 km) from Chandeleur Sound (see image below).



b. Existing Structures

If applicable. Describe the current and historical structures found in the action area (e.g., buildings, parking lots, docks, seawalls, groynes, jetties, marina). If known, please provide the years of construction.

There are several pipeline canals and interconnected bayous located within the action area. Oil and gas exploration in the action area has also resulted in pipelines and wells. Several pipelines cross the marsh restoration area (LCSINC 2019).

c. Seagrasses & Other Marine Vegetation

If applicable. Describe seagrasses found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the action area.

Submerged aquatic vegetation (SAV) can be found throughout Louisiana's coastal zone marshes and estuaries, typically on substrates that consist of sand/mud and in water depths of 4 feet or less.

Estuarine submerged vegetation beds are dominated by widgeon grass (*Ruppia maritima*) and wild celery (*Vallisneria americana*), while the marine seagrass beds are dominated by turtle grass (*Thalassia testudinum*) (LDWF 2019a). The last remaining extensive seagrass beds are located along the north shore of Lake Pontchartrain and into Lake Maurepas and also in and around the Chandeleur Islands (approximately 97 km (60 nmi.) east of the proposed project area) (LDWF, 2019).

SAV was observed in shallow water areas throughout the marsh restoration portion of the project area (APTIM 2018b), but surveys conducted in the proposed borrow area, pipeline corridor, and access channel confirmed that there are no SAV present (APTIM 2018a).

d. Mangroves

If applicable. Describe the mangroves found in action area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the action area.

Black mangrove (*Avicennia germinans*) can be found in mixed stands of smooth cordgrass (*Spartina alterniflora*) generally near the leeward side of barrier islands and high salinity salt marsh habitats in Louisiana (Giri et al. 2011). Black mangroves were observed within the marsh areas of the action area (APTIM 2018b).

e. Corals

If applicable. Describe the corals found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the action area. Click here to enter text.

Not applicable; corals are not expected to be in the action area. The action area is surrounded by estuarine systems that lack suitable environments for corals and is located outside of mapped distributions (Love et al. 2013; NOAA 2019). The closest know reef that supports coral assemblages is the Viosca Knoll reef in the Gulf of Mexico which is located approximately 91 nmi (170 km) from the action area.

f. Uplands

If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).

Within the action area, small areas of upland habitats with live oaks are limited to along the levee for the Gulf Intracoastal Water Way (GIWW) and along the banks and levees of the Chef Mentuer Pass.

g. Marine Mammals

Please select the following marine mammals that could be present within the project area:

Dolphins	YES☒	NO☐
Whales	YES☐	NO☒
Manatees	YES☒	NO☐

If applicable. Indicate and describe the species found in the action area. Use NMFS' Stock Assessment Reports (SARs) for more information, see http://www.nmfs.noaa.gov/pr/sars/region.htm

Common bottlenose dolphins (*Tursiops truncatus truncatus*; Northern GOM BSE stock, [NMFS 2018) utilize the southeastern Louisiana salt and brackish marsh habitat within Lake Borgne and Bay Boudreau, LA (Hayes et al. 2019); therefore, this species may be present in the action area.

West Indian Manatee (*Trichechus manatus*) is common in shallow coastal waters as they feed on submerged vegetation. Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee.

h. Soils and Sediments

If applicable. Indicate topography, soil type, substrate type.

Sediments within the marsh creation portion of the action area are categorized as Clovelly muck and Lafitte muck according to the Soil Survey Geographic Database (SSURGO) Soil Classification (NRCS, 2018). Clovelly muck is part of the Clovelly series, which consists of very deep, very poorly drained, very slowly permeable soils and are typical of broad coastal marshes that are nearly continuously flooded with brackish water. Lafitte muck is part of the Lafitte series, which consists of very deep, very poorly drained, moderately rapidly permeable organic soils and are found in intermediate and brackish marshes in coastal areas. (NRCS, 2018).

Soil conditions within the marsh restoration portion of the action area consisted of very soft peat and organic clay to an approximate depth of 15 feet below the mudline. Very soft to soft Holocene clay with varying silt and sand contents were encountered between depths of 15 to 60 feet. Underlying this layer of soft to very soft clay, medium to stiff Pleistocene clay, and sandy clay deposits were observed to the boring (sampling) termination depths (APTIM 2018a).

Sediment and soil conditions within the borrow area and pipeline corridor portion of the action area were found to be predominantly very soft clays with trace to some silt layers and lenses, classified as CH (inorganic clays of high plasticity). The uppermost layers of the (typically the top 4 feet to 6 feet) consisted of very soft sandy clays with whole shells, organics, peats and silts. (APTIM 2018a).

i. Land Use

If applicable. Indicate existing or previous land use activities (agriculture, dredge disposal, etc).

This area has been historically used for commercial and recreational fishing activities. The Proposed Project is located near the confluence of two major navigation and shipping channels, the Mississippi River Gulf Outlet (MRGO) and the Gulf Intracoastal Waterway (GIWW). Because of multiple environmental impacts to coastal wetlands system in southeastern Louisiana and potential role in the severity of flooding related to Hurricane Katrina, the USACE provided a report to Congress to deauthorize MRGO. Since the deauthorization, MRGO has been modified and restoration efforts by the USACE and other State and Federal Agencies have been completed. The MRGO is no longer utilized for navigation and shipping. Public oyster leases are also located within the action area (Please see Figure in Section B of this Form). The marsh areas also provide recreational opportunities and provide for duck hunting (APTIM 2018a, 2018b).

The action area falls within a portion of the Bayou Sauvage National Wildlife Refuge acquisition boundary, one of the last remaining marsh areas adjacent to Lakes Pontchartrain and Borgne (USFWS

2009). It is the largest urban National Wildlife Refuge, as it falls within the city limits of New Orleans.

j. Essential Fish Habitat

If applicable. Describe any designated Essential Fish Habitat within the project area

EFH consultation has been completed for this project through the USACE. See the below embedded PDF for documentation:

Memo for File EFH consult_Corps_WGra

The Gulf of Mexico Fishery Management Council delineated Essential Fish Habitat (EFH) for federally managed species in coastal Louisiana. The Project Site is within Eco-Region 3, and contains a variety of estuarine habitat types designated as EFH including: open water, emergent saline and brackish marsh, submerged aquatic grass beds, oyster reef, sand/shell bottom, and mud/soft bottom. The National Marine Fishery Service (NMFS) also manages highly migratory species (e.g., sharks) for which EFH is identified by geographical area rather than habitat type.

Eleven species with designated EFH are likely to be within the Golden Triangle Project Area, including shrimp (two species), fish (four species), and sharks (five species). The following table lists the federally managed species found within the Golden Triangle Project Area. No Habitat Areas of Particular Concern (HAPC) or EFH Areas Protected from Fishing (EFHA) were identified within the Project Area.

Table 1. Federally Managed Species in the Golden Triangle Project Area

Common Name	Scientific Name
REEF FISH	
gray (mangrove) snapper	*Lutjanus griseus*
lane snapper	*Lutjanus synagris*
MACKERELS	
Spanish mackerel	*Scomberomorus maculatus*
SHRIMP	
brown shrimp	*Farfantepenaeus aztecus*
white shrimp	*Litopenaeus setiferus*
SHARKS	
Atlantic sharpnose shark	*Rhizoprionodon terraenovae*
black-tipped shark	*Carcharhinus limbatus*
bull shark	*Carcharhinus leucas*
finetooth shark	*Carcharhinus isodon*
scalloped hammerhead shark	*Sphyrna lewini*
RED DRUM	
red drum	*Sciaenops ocellatus*

F. Project Description

I. *Describe the Proposed Action/Project Objectives: What are you trying to accomplish and how with this project? Describe in detail the construction equipment and methods** needed; long term vs. short term impacts; duration of short term impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained.*

Attach a separate map showing project footprint, avoidance areas, construction accesses, staging/laydown areas.

***If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, artificial reefs or fishery activities, list the method here, but complete the next section(s) in detail.*

The Golden Triangle Marsh is a narrow band of brackish marsh located directly east of New Orleans between Lake Borgne and the confluence of the Mississippi River Gulf Outlet (MRGO) and the Gulf Intracoastal Waterway (GIWW).
The goals of the Proposed Project are:

1. Restore approximately 600 acres of brackish marsh.
2. Restore and protect wetland, fish, and wildlife habitats.
3. Restore degraded marsh and reduce wave/wake erosion.
4. Maintain landscape integrity and enhance community resilience.
5. Promote natural resource stewardship and environmental education and outreach.

The Proposed Project includes restoration areas in the Golden Triangle Marsh; a borrow area located within Lake Borgne; a pipeline corridor connecting the borrow area to the restoration site; and an access corridor from Chef Menteur Pass, northeast of the marsh, to the borrow area. A staging area would be located near the shoreline of Lake Borgne between the marsh restoration areas. See embedded Permit Drawings and Plans in Section B above.

The Golden Triangle Marsh Creation Project would create or restore approximately 774 acres of broken marsh and open water, which includes the restoration of 694 acres of degraded marsh and nourishment of 80 acres of marsh, through the construction of approximately 44,000 linear feet of containment dikes. These marshes act as a buffer to reduce the full force and effects of wave action, saltwater intrusion, storm surge, and tidal currents on associated estuaries and wetlands, thereby helping restore and protect wetland, fish and wildlife habitats. The project would help buffer the surge barrier, which will increase flood protections to highly populated areas of New Orleans and provide important estuarine habitat for Lake Borgne.

There are three marsh creation areas (MCAs) proposed under the Golden Triangle Marsh Creation Project. These MCAs include the following:

- MCA 1: 560 acres of broken marsh and open water
- MCA 2: 134 acres of open water and broken marsh
- MCA 3: 80 acres of marsh adjacent to Lake Borgne

Each of the MCAs would be constructed to an elevation of +2.5 feet NAVD88 with material pumped from the Golden Triangle Borrow Area in Lake Borgne to maximize the time that the marsh elevation is in the intertidal range (where intertidal is referring to the water level between local mean high water and mean low water elevations and not the global WVA definition of intertidal). An estimated 6,700,000 cubic yards (yd^3) of marsh compatible sediments would be required to meet the elevation goals in the three MCAs. The

total marsh fill footprint is approximately 774 acres.

Approximately 44,930 linear feet of earthen containment dikes would be constructed along the perimeter of the MCAs to contain the marsh fill material. These dikes would be constructed using in-situ material excavated within the boundaries of the fill area so that the excavated area is refilled during construction.

The earthen dike fill source would be excavated from the area adjacent to the earthen dike, within the marsh creation areas. Marsh buggies with back-hoe buckets have been proposed to be used to construct the earthen containment dikes, supported by sheet piling.

Following fill and dike construction activities, vegetation would be planted throughout the MCAs and along containment dike slopes to support marsh restoration. These vegetation plantings would consist of salt meadow cordgrass and marsh hay, which are common brackish marsh species found in the area.

Marsh fill material used to construct the MCAs would be dredged hydraulically from a 78-acre borrow area approximately 5.3 miles east-northeast of the restoration areas within Lake Borgne. The borrow area contains a mixture of soft to very soft clays, with fine sand and/or silts, which is compatible material for marsh creation. The borrow area design consists of one dredge cut to -24.0 feet NAVD88, with approximately 10,000,000 yd^3 of available marsh compatible fill material. Approximately 6,700,000 yd^3 of marsh compatible sediments from Lake Borgne would be dredged to fill the three MCAs. A cutterhead suction dredge will be used to collect fill material from the proposed borrow site in Lake Borgne.

One booster pump would be installed within the pipeline corridor to facilitate efficient hydraulic dredging and placement of marsh fill. A maximum area of 200 feet by 50 feet would be excavated to a maximum elevation of -10.0 feet NAV88 to accommodate the booster pump. All excavated material would be sidecast adjacent to the booster pump footprint within the pipeline corridor.

A 361-acre pipeline corridor would be used to transport fill from the borrow area to the restoration site through a submerged pipeline. The pipeline corridor runs from east to west from the Golden Triangle Borrow Area to MCA 1. The pipeline corridor passes through a 500-foot wide area adjacent to the northwest shoreline of Lake Borgne that had been previously cleared of oyster leases. The pipeline corridor would be 100 feet wide.

The average pipeline distance would be 31,933 linear feet, with the longest pumping distance being from the borrow area to the central fill area (32,600 linear feet). All dredge pipe/subline installed within the corridor would be submerged, and navigation lights would be affixed to buoys every 500 feet (approximately 70 buoys at maximum length), or per U.S. Coast Guard regulations, to notify marine traffic of the submerged pipeline. Bathymetry within Lake Borgne varies from approximately -6.0 feet NAVD88 to -12.0 feet NAVD88. It is assumed that these depths would be sufficient for floating equipment to install the subline.

A 210-acre access corridor from Chef Menteur Pass into Lake Borgne would be designated as the dredge access corridor to the Golden Triangle Borrow Area. Equipment would enter the access area via the GIWW and into Lake Borgne via the Pass. Bathymetric surveys show that this access corridor may allow for navigation of equipment to access the borrow area without the need for access dredging. The corridor was previously analyzed and cleared for cultural resources in anticipation that it would be permitted for excavation on an as-needed basis to accommodate dredging equipment.

See additional information in Section F.III.f below.

II. *Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)*

Anticipated project start date would be in Summer 2020, and the total estimated construction time is approximately 14-15 months. This project schedule assumes a 60-day period for mobilization and pre-construction surveys; production rate of 300 linear feet/day per marsh buggy for construction of the containment dikes and one week closure periods for the containment dikes in MCAs 2 and 3, resulting in approximately 123 days to create MCAs 1-3, which may be decreased to 93 days if the construction contractor begins dredging prior to the completion of construction of the containment dike; a marsh fill production rate of 70,000 yd^3/day, resulting in a total of 142 days to complete marsh fill activities; a 70-day demobilization period that includes a 30-day waiting period to begin final marsh platform elevation surveys; and 60 days of flexibility to account for weather and other uncontrollable events. Total anticipated in-water work would occur for 265 days.

The Construction Schedule and sequence of the Proposed Project will likely begin with the construction of the earthen containment dikes. During construction of the earthen containment dikes in Marsh Creation Areas (MCA) 1, 2, and 3, other construction activities may take place simultaneously to stage equipment and prepare for dredging operations within Lake Borgne borrow site. The submerged pipeline will then be installed, extending from the borrow area in Lake Borgne to the MCA 1, 2, and 3. The cutterhead dredge will be transported to the project site, although dredging will not commence until containment dikes enclosing at least one MCA is completed and dewatering structures are in position and functioning. Lines for floating objects tethered to the sea floor would ensure that all in-water lines be made of materials such as stiff cable or plastic-coated lines and any ropes need to be thick, heavy, and taut lines that do not loop or entangle, and are installed in a manner to minimize the risk of entanglement of protected species.

Once all three MCAs are filled and settled, gapping of the earthen dikes will occur to facilitate tidal exchange. The MCAs will be monitored to assess the recruitment of natural vegetation and if natural recruitment is not occurring at a satisfactory level, marsh vegetation may be planted within the MCAs (APTIM 2018b). The need for vegetation planting will be determined a year or two after construction is completed.
The total time for construction is estimated to take 425 days.

III. *Specific In-Water and/or Terrestrial Construction Methods*

Please check yes or no for the following questions related to in-water work and overwater structures

Does this project include in-water work?	YES☒	NO☐
Does this project include terrestrial construction?	YES☐	NO☒
Does this project include construction of an overwater structure?	YES☐	NO☒
Will fishing be allowed from this overwater structure?	YES☐	NO☒
Will wildlife observation be allowed from this overwater structure?	YES☐	NO☒
Will boat docking be allowed from this overwater structure?	YES☐	NO☒
Will fishing be allowed from this overwater structure?	YES☐	NO☒

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If this is a fishing pier, please provide the following information: public or private access to pier, estimated number of people fishing per day, plan to address hook and line captures of protected species, specific operating hours/open 24 hours, artificial lighting of pier (if any), number of fish cleaning stations, and number of pier attendants (if any).

Not applicable; not a fishing pier.

Construction: Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what type and size of materials will be used and if machines will be used, manual labor, or both. Indicate if work will be done from upland, barge, or both.)

iii. *Use of "Dock Construction Guidelines"?*
http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/dockkey2002.pdf

iv. *Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing?*

v. *Height above Mean High Water (MHW) elevation?*

vi. *Directional orientation of main axis of dock?*

vii. *Overwater area (sq ft)?*

Construction methods for the Proposed Project would involve use of a hydraulic cutterhead suction dredge to excavate marsh fill material from the borrow area. A booster pump would be installed as needed to help pump material to the fill sites. Marsh buggies would be used to construct earthen dikes. A staging area would be located near the shoreline of Lake Borgne between the three MCAs and along the pipeline corridor.

The earthen dike fill source would be excavated from the area adjacent to the earthen dike, within the marsh creation areas. The earthen containment dikes would be constructed to a crest elevation of +4.0 feet, NAVD88 with a minimum crest width of 5 feet. In areas where the dike crosses portions of existing marsh, the dike will be built on top of the existing marsh platform. Additional training dikes may be constructed within the marsh footprint to control the fill at the discretion of the construction contractor. Dewatering would occur in up to six locations around the MCAs within the containment dike boundary to allow excess water to drain from the fill areas.

Marsh fill material would be pumped hydraulically to the restoration area via a submerged pipeline. The submerged pipeline would be transported to the site on pontoons in approximately 500-foot sections. Once in the restoration area, the various sections of submerged pipeline would be joined together using ball joints into lengths of up to 2,500 feet and then sank into position within the pipeline corridor. Floating pipeline would be attached to the submerged pipeline at the borrow area end while the opposite end of the submerged line is managed ashore. Once the submerged line is in place, the dredge would be connected to the floating line and traverse the borrow area to mine sediments. Shore pipe would be added as needed to advance the end of the discharge pipe as the MCAs are filled, and flexible HDPE pipe is typically used to distribute the marsh fill material due to self-weight and maneuverability. Marsh buggies will be used to move the end of the discharge to uniformly fill the marsh area. The construction contractor may opt to construct secondary dikes within the marsh platform to assist with controlling the placement of the material.

The total estimated construction time is approximately 14-15 months. This project schedule assumes a 60-day period for mobilization and pre-construction surveys; production rate of 300 linear feet/day per marsh buggy for construction of the containment dikes and one week closure periods for the containment dikes in MCAs 2 and 3, resulting in approximately 123 days to create MCAs 1-3, which may be decreased to 93 days

if the construction contractor begins dredging prior to the completion of construction of the containment dike; a marsh fill production rate of 70,000 yd^3/day, resulting in a total of 142 days to complete marsh fill activities; a 70-day demobilization period that includes a 30-day waiting period to begin final marsh platform elevation surveys; and 60 days of flexibility to account for weather and other uncontrollable events.

Following a year or two after construction of containment dikes and fill of MCAs, vegetation would be planted within the marsh creation areas and remaining containment dikes. This schedule provides time for the marsh material to consolidate to facilitate accessibility and for natural vegetation to take hold.

b. *Pilings & Sheetpiles: If this project includes installation of pilings or sheets, please provide answers to questions 1-11 listed below*

1. Method of pile installation	Barge mounted excavator
2. Material type of piles used	Steel
3. Size (width) of piles/sheets	22 inches
4. Total number of piles/sheets	310
5. Number of strikes for each single pile	Sheets vibrated into place
6. Number of strikes per hour (for a single pile)	N/A
7. Expected number of piles to be driven each day	30
8. Expected amount of time needed to drive each pile (minutes of driving activities)	10 minutes
9. Expected number of sequential days spent pile driving	10
10. Whether pile driving occurring in-water or on land	Water
11. Depth of water where piles will be driven	Varies from -3.5 to -9.0’ NAVD 88

Metal sheet pile may be required to support the construction of containment dikes for MCA sites 2 and 3 of the Proposed Project. Construction for both of these sites consist of placement of sheet piles to an approximate depth of -40 feet NAVD88 with a top elevation at +4.0 feet NAVD88. Additionally, in areas where sheet pile will be installed medium grade, coarse sand will be transported to the site and placed on both sides of the sheet pile to provide lateral support. The sheet pile will be installed utilizing marsh buggies and the placement of sand berms on either side of the sheet pile will be placed utilizing marsh buggy backhoes. The sheet piling may be only utilized for a 3 year period and may potentially be removed (APTIM 2018b).

c. *Marinas and Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)*

Not applicable; not a marina or boat slip.

d. *Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)*

Not applicable; not a boat ramp.

e. *Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline*

armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the action area.

Not applicable; the Proposed Project would not include shoreline armoring.

f. *Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft2) to be dredged, volume of material (yd3) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). If digging in the terrestrial environment, please describe fully with details about possible water jetting, vibration methods to install pilings for dune walk-over structure, or other methods. If using devices/methods/turtle relocation dredging to relocate sea turtles, then describe the methods here.*

The Proposed Project would require the use of two dredging/digging methods. Marsh buggies with back-hoe buckets have been proposed to be used to construct the earthen containment dikes around each MCA. A cutterhead suction dredge will be used to collect fill material from the proposed borrow site in Lake Borgne.

The first construction stage of the Proposed Project will require earthen containment dikes to be constructed to contain the dredged fill sediments. Earthen containment dikes will be constructed along the perimeter of each MCA. Borrow material for the containment dikes will be excavated from within the fill footprint so that the excavated area is refilled during construction.

Two earthen containment dike designs are proposed for the construction of marsh fill material containment. The first design consists of an earthen dike elevation of +4.0 feet NAVD88 with side slopes of 5H:1V. The fill source material for the earthen containment dike construction would be located parallel to the earthen dike on the interior of the marsh fill areas so that it would be refilled once marsh sediment is pumped from the borrow area and placed in the fill area. Fill source excavation would be allowed to a depth of -10.0 feet NAVD88 for MCA 2 and MCA 3 with a minimum shelf distance from the inner toe of the earthen dike of 25 feet. Fill source excavation for MCA 1 would be allowed to a depth of -8.0 feet NAVD88 with a minimum shelf distance from the inner toe of the earthen dike of 30 feet.

A cutterhead suction dredge will be used to collect the required fill consisting of 5,180,190 yd^3 (MCA 1 = 342,870 yd^3, MCA 2= 3,952,130 yd^3, MCA 3 = and 885,200 yd^3) of sediment within the 78-acre designated borrow site in Lake Borgne (APTIM 2018b). The bathymetry in the borrow area ranges from -6.0 feet NAVD88 on the southwest side to -12.0 feet NAVD88 on the northeast side. Dredging would consist of one cut depth ranging from 12 to 18 feet in thickness and extend to the -24.0-foot NAVD88 elevation. The borrow area contains a total of 10 mcy of very soft clays and silts with trace to some sand and silt layers, classified as CL (inorganic clays of low to medium plasticity, sandy clays, silty clays) and very soft clays with trace to some silt layers and lenses, classified as CH (inorganic clays of high plasticity) (APTIM 2018a).

The dredged sediment from the borrow area will be pumped from the borrow site via a submerged pipeline. This pipeline will have a maximum length of 6.2 miles between the borrow site in Lake Borgne and the furthest reaches of MCA 2. The dredged sediment will be pumped into the three MCAs utilizing hydraulic placement which may require a booster pump to be located midway within the permitted pipeline corridor between the borrow site and designated MCAs. One booster pump would be installed within the borrow area to facilitate efficient hydraulic dredging and placement of marsh fill. A maximum area of 200 feet by 50 feet would be excavated to a maximum elevation of -10.0 feet NAV88 to

accommodate the booster pump. All excavated material would be sidecast adjacent to the booster pump footprint.

As the dredged sediment would be fully utilized in the marsh fill area, temporary or permanent spoil placement is not anticipated.

A Hazardous, Toxic, and Radioactive Waste (HTRW) Study was not conducted as no indication of hazardous, toxic, and/or radioactive waste had been observed at the project site.

g. *Blasting (Projects that use blasting might not qualify as "minor projects," and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)*

Not applicable; no blasting is planned.

h. *Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions [i.e., management and siting considerations, stakeholder considerations, environmental considerations, long term maintenance plan (periodic clean-up of lost fishing gear/debris]), deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional Information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.*

Not applicable; does not include artificial reefs.

i. *Fishery Activities (Describe any use of gear that could entangle or capture protected species. This includes activities that may enhance fishing opportunities (e.g. fishing piers) or be fishery/gear research related (e.g. involve trawl gear, gillnets, hook and line gear, crab pots etc)).*

Not applicable; no fishery activities are planned.

G. NOAA Species & Critical Habitat and Effects Determination Requested

If your project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.

☐This project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats.

☐ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area.
Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit: http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf.

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land

in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

Species and/or Critical Habitat	**CH Unit** (if applicable)	**Location** (Sea turtles and Gulf Sturgeon only)	**Determinations** (see definitions below)	**For "No Effect", please select justification.**
Gulf Sturgeon (T)	N/A	Marine	May Affect, Not Likely to Adversely Affect	
Gulf Sturgeon CH	8	Marine	May Affect, Likely to Adversely Affect	
Green Sea Turtle (T)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	
Loggerhead Sea Turtle	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	
Kemp's Ridley Sea Turtle (E)	N/A, outside CH	Marine	May Affect, Not Likely to Adversely Affect	

Determination Definitions

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

NLAA = may affect, not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

LAA = may affect, likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

Critical Habitat No Destruction = When the proposed action will not diminish the value of critical habitat.

H. USFWS Species & Critical Habitat and Effects Determination Requested

If your project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section G. and proceed to Section H.

☐This project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats.

☐ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit: http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf.

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

Species and/or Critical Habitat	**CH Unit** (if applicable)	**Location** (Sea turtles and Gulf Sturgeon only)	**Determinations** (see definitions below)	**For "No Effect", please select justification.**
Pallid Sturgeon	N/A	Riverine/Freshwater	No Effect	Species does not occur within action area
West Indian Manatee	N/A	Choose an item.	May Affect, Not Likely to Adversely Affect	Choose an item.

Pallid Sturgeon

The Pallid Sturgeon inhabits large freshwater rivers with flowing waters specifically within the main-channel habitats (USFW 2014). The Proposed Project is located in Lake Borgne, the estuarine environments of which lack the characteristics of large riverine main channel habitats, sand bars, and islands preferred by the pallid sturgeon (USFWS 2007); thus, this species is not expected to occur in the action area. The Proposed Project activities are anticipated to result in temporary and localized excavation and construction noise for the dredging and marsh restoration. These actions are not expected to result in broad spatial and temporal scale effects beyond the action area.

Determination Definitions

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

NLAA = may affect, not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may

be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

LAA = may affect, likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

Critical Habitat No Destruction = When the proposed action will not diminish the value of critical habitat.

I. Effects of the proposed project to the species and actions to reduce impacts

NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.

I. *Explain the potential beneficial and adverse effects to each species listed above. Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts and where possible, quantify effects.*

If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.

The Gulf sturgeon, Pallid sturgeon, and West Indian manatee were all listed as being potentially present in the project area by the USFWS Information for Planning and Consultation (IPaC) database (USFWS 2019a);

Gulf Sturgeon -

Direct and Indirect Impacts: The Gulf sturgeon can occur in river systems and nearshore bays and estuaries depending upon the life stage of the species and season (NOAA Fisheries 2016). In Louisiana, the Gulf sturgeon is found in the Pearl, Bouge Chitto and Tchefuncte rivers in St. Tammany and Washington Parishes and is suspected to also occur in any large river in the Lake Pontchartrain drainage (LDWF 2019b). Gulf sturgeon are categorized into spawning populations based on the river system they inhabit. Currently Gulf sturgeon inhabit and spawn in seven river systems, the Pearl River system is the closest to the proposed project area. The Pearl River empties into the eastern portion of Lake Borgne near the Rigolets. The action area is located within designated critical habitat for this species in Lake Borgne and Lake Pontchartrain (see Section J).

As the action area contains estuarine habitat, the Proposed Project would have the potential to impact adult and sub-adult Gulf sturgeon while overwintering and foraging. Gulf sturgeon feed on a variety of

bottom dwelling marine organisms, including amphipods, isopods, lancelets, polychaetes, and other marine worms (USFWS 2019b). Gulf sturgeon are found primarily in water 2-4 meters deep with at least 80% sand, where the benthic community was dominated by crustaceans and annelids (Fox et al. 2002). As sandier substrates provide higher concentrations of benthic organisms, sandy-bottomed habitats are likely more valuable foraging ground to Gulf sturgeon.

Gulf sturgeon could be impacted by in-water work that includes dredge and fill activities that result in temporary localized turbidity, decreases in dissolved oxygen, and short-term habitat alteration caused by dredging activity. Noise related to construction and human activity may also disturb Gulf sturgeon. These fish are highly mobile; therefore, individuals disturbed by effects from construction activities would likely move to another area. Other short-term impacts may include potential entrapment or entrainment during dredging and/or entanglement with anchor management systems. Long-term impacts such as downstream turbidity, pollution, or habitat loss are not anticipated due to the localized and temporary nature of the Proposed Project activities and the implementation of the Gulf Sturgeon BMPs to reduce and avoid potential impacts to this species. As the long-term effects associated with the Proposed Project are anticipated to be beneficial to ecological conditions of benthic environments in the action area, the overall impacts of the Proposed Project could benefit foraging habitat for this species.

Impact avoidance measures for the Proposed Project may include:

- Practice Initial Start-up periods prior to dredging operations.
- Halt dredging activity immediately if a Gulf sturgeon is cited within the vicinity of the dredging operations and report the sighting to the Louisiana Dept. Wildlife and Fisheries.
- Operate dredge equipment in a manner to avoid risks to Gulf sturgeon (e.g., disengage pumps when the cutter head is not in the substrate; avoid pumping water from the bottom of the water column).
- Implement NMFS Sea Turtle and Smalltooth Construction Conditions (revised March 23, 2006) and NMFS Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012), as they are protective of Gulf sturgeon as well.
- In-water lines for floating platforms would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to Gulf sturgeon the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance from human noise and activity and/or habitat impacts associated with construction activities may still contribute to a minor increase in adverse effects which would be limited to the in-water construction period, when combined with existing levels of disturbance and human noise and activity.

West Indian Manatee -

Direct and Indirect Impacts: Habitats suitable to support marine vegetation may be present within the action area that could attract the West Indian manatee. However, no known occurrences of this species has been documented within the action area; thus, occurrences of this species is rare and there is a low probability the species would occur in the action area (LDWF 2019b; NatureServe 2016). Manatees moving between areas of suitable habitat may occur within the action area.

Proposed Project in-water work includes dredging, marsh fill, and placement of pipeline. These activities will result in temporary localized turbidity and construction noise that may result in avoidance behaviors. Other impacts include collision with vessels/barges, and increased risk of entanglement with debris that may catch on anchor management systems. Standard Manatee Conditions BMPs will be implemented to reduce and avoid potential impacts to this species. Adherence to the protection measures would help ensure that any manatee present in the action area would not be adversely affected. The disturbance to the manatee would be temporary, limited to project construction and would result in temporary displacement as individuals would likely move to another area for foraging or resting purposes.

Impact avoidance measures for the Proposed Project may include:

- All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.
- All construction personnel are responsible for observing water-related activities for the presence of manatee(s).
- Temporary signs would be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., work area), and at least one sign should be placed where it is visible to the vessel operator.
- Siltation barriers, if used, would be made of material in which manatees could not become entangled, and should be properly secured and monitored.
- If a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels shall operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, should be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area on its own accord, special operating conditions are no longer necessary, but careful observations would be resumed.
- Any manatee sighting would be immediately reported to the USFWS and the Louisiana Department of Wildlife and Fisheries (LDWF) Natural Heritage Program.
- To prevent entrapment of manatee inside of dredged material receiving areas that have dikes or other retention features that enclose an area of open water, the area would be inspected for the presence of manatee(s): 1) before complete closure of the confining features; and 2) again before material is discharged in to the receiving area. Any manatee that is sighted would be allowed to leave the area before work resumes.
- In-water lines would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to West Indian manatee, the likelihood for cumulative impacts to this species is low. The temporary increase in potential for disturbance or strikes of individual manatees from human noise and activity and/or habitat impacts associated with construction activities may still contribute to a minor increase in adverse effects, when combined with existing levels of disturbance and human noise and activity. An increase in marsh habitat area would be beneficial for healthy vegetative communities as marsh habitats are a major energy source for both the planktonic and benthic communities of estuarine and nearshore habitats, which could contribute to improved conditions for SAV in the action area.

Sea Turtles

Three species of sea turtles may possibly occur in the action area (USFWS 2019a), and include the loggerhead, Kemp's Ridley, and green sea turtle species. Due to the absence of suitable nesting beach habitats and the absence of any records of nesting for these species, these species are not expected to occur in terrestrial habitats within the Proposed Project action area (LDWF 2019b; Love et al. 2013; NatureServe 2016; NOAA 2019).

Direct and Indirect Impacts: The loggerhead, green and Kemp's Ridley sea turtles may be present within the Proposed Project action area and it is located within the known ranges of these species (LDWF 2019b; NatureServe2016). The Proposed Project's in-water work may result in temporary increases in turbidity and construction noise that may result in temporary avoidance behaviors. Sea turtles would likely avoid or move away from construction activities. Other impacts include collision with vessels/barges and/or entrapment during fill activities, and increased risk of entanglement with debris that may catch on anchor management systems. Sea turtle BMPs will be implemented to reduce and avoid impacts to these species. The construction of the artificial oyster reef would improve benthic habitat and water quality and could benefit to foraging habitat for sea turtles in the area.

Impact avoidance measures for the Proposed Project will include:

- Implement the following in-water work guidelines:
    - NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions (revised March 23, 2006);
    - NMFS's Measures for Reducing Entrapment Risk to Protected Species (revised May 22, 2012); and
    - NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners (revised February 2008).
- In-water lines would be made of materials such as stiff cable or plastic-coated lines and any ropes would be thick, heavy, and taut lines that do not loop or entangle, and would be installed in a manner to minimize the risk of entanglement of protected species.

Cumulative Impacts: With the implementation of BMPs and avoidance measures to reduce the potential for impacts to sea turtle foraging habitat, the likelihood for cumulative impacts to these species is low. The temporary increase in potential for disturbance or strikes of individual sea turtles from human noise and activity and/or habitat impacts associated with construction activities may still contribute to an increase in adverse effects, when combined with existing levels of disturbance and human noise and activity.

II. *Explain the actions to reduce adverse effects to each species listed above. For each species for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.*

Frequently Recommended BMPs: This checklist provides standard BMPs recommended by NOAA and USFWS. Please select any BMPs that will be implemented:

☒	**USFWS Standard Manatee In Water Conditions**

☒	**NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions**[1]
☒	**NMFS Measures for Reducing the Entrapment Risk to Protected Species**[1]
☒	**NFMS Vessel Strike Avoidance Measures and Reporting for Mariners**[1]

Additional BMPs or Conservation Measures

Chapter 6 of the PDARP included an important appendix (6.A) of best practices, see information starting on page 6-173.
http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/Chapter-6_Environmental-Consequences_508.pdf
Use the box below to indicate which best management practices or conservation measures you'll be using in your project (that were not listed in Section I above)

Additional practices and measures have not yet been identified.

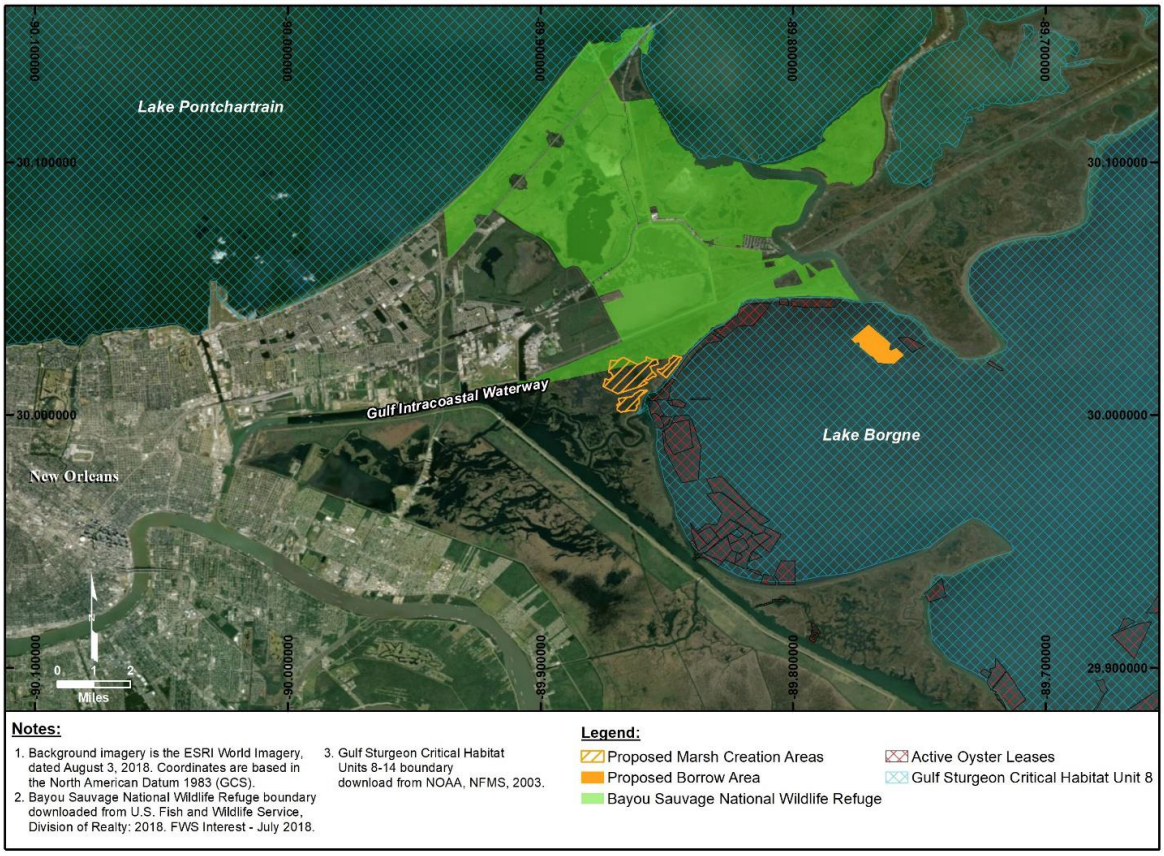
J. Effects to critical habitats and actions to reduce impacts

NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.

I. *Explain the potential beneficial and adverse effects to critical habitat listed above. Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts to physical and biological features, and where possible, quantify effects (e.g. acres of habitat, miles of habitat).*

Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.

[1] Documents can be found here: http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html



Aerial image of area showing Gulf Sturgeon Critical Habitat.

The Proposed Project action area overlaps Gulf sturgeon designated critical habitat Unit 8 (68 FR 13370), as all of Lake Borgne is designated as Gulf sturgeon critical habitat. Proposed Project elements that would be located within the critical habitat unit include the 78-acre borrow area and the portion of the pipeline corridor within Lake Borgne.

Lake Borgne, including the borrow area, is designated as critical habitat for the Gulf sturgeon. Therefore, the dredging of the borrow area could be considered an impact to critical habitat. Impacts to Gulf Sturgeon will be addressed during formal consultation from NMFS to address adverse effects from dredging in the borrow areas due to this and other projects that might use the Lake Borgne borrow source.

There will be a net positive impact on overall marsh habitat associated with the proposed project. Some shallow water areas will be filled to create marsh but the deeper channels accessible to Gulf sturgeon will not be filled.

II. *Explain the actions to reduce adverse effects to critical habitat listed above. For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.*

Extensive habitat monitoring of this project area will be implemented pre and post construction as a part of the Lake Borgne Marsh Creation project MAM plan .

K. Marine Mammals

I. The Marine Mammal Protection Act prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals (e.g.,whales, dolphins, manatees). However, the MMPA allows limited exceptions to the take prohibition if authorized, such as the incidental (i.e., unintentional but not unexpected) take of marine mammals. The following questions are designed to allow the Agencies to quickly determine if your action has the potential to take marine mammals. If the information provided indicates that incidental take is possible, further discussion with the Agencies is required.

Is your activity occurring in or on marine or estuarine waters? ☐NO ☒YES

If yes, is your activity likely to cause large-scale, ecosystem level impacts to the quality (e.g. salinity, temperature) of marine or estuarine waters? ☒NO ☐YES

II. If Yes, describe activities further using checkboxes. Does your activity involve any of the following:

NO	YES	ACTIVITY
☒	☐	*a) Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz*
☐	☒	*b) In-water construction or demolition*
☒	☐	*c) Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)*
☒	☐	*d) In-water Explosive detonation*
☒	☐	*e) Aquaculture*
☒	☐	*f) Restoration of barrier islands, levee construction or similar projects*
☒	☐	*g) Fresh-water river diversions*
☒	☐	*h) Building or enhancing areas for water-related recreational use or fishing opportunities (e.g. fishing piers, bridges, boat ramps, marinas)*
☐	☒	*i) Dredging or in-water construction activities to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.*
☐	☒	*j) Conducting driving of sheet piles or pilings*
☒	☐	*k) Use of floating pipeline during dredging activities*

III. If you checked "Yes" to any of the activities immediately above or the activity could impact the quality of marine or estuarine waters, please describe the nature of the activities in more detail or indicate which section of the form already includes these descriptions. See the NOAA Acoustic Guidance for more information: http://www.nmfs.noaa.gov/pr/acoustics/faq.htm

See Sections F.I. and II. project description and construction methods sections above. Access to the project site would be through existing navigable waterways. Chef Menteur Pass has been designated as the dredge access corridor to the Golden

Triangle Borrow Area. Equipment may enter the area via the GIWW and into Lake Borgne via the Chef Menteur Pass. Bathymetric surveys conducted by APTIM show that this access corridor may allow for navigation of equipment to access the borrow area without the need for access dredging (APTIM 2018b Metal sheet pile may be required to support the construction of containment dikes for MCA sites 2 and 3 of the Proposed Project. Construction for both of these sites consist of placement of sheet piles to an approximate depth of -40 feet NAVD88 with a top elevation at +4.0 feet NAVD88. Additionally, in areas where sheet pile will be installed medium grade, coarse sand will be transported to the site and placed on both sides of the sheet pile to provide lateral support. The sheet pile will be installed utilizing marsh buggies and the placement of sand berms on either side of the sheet pile will be placed utilizing marsh buggy backhoes. The sheet piling may be only utilized for a 3 year period and may potentially be removed (APTIM 2018b). See previous table for more detail on sheetpiles.

IV. *Frequently Recommended BMPs for marine mammals (manatees are covered in Section I above): This checklist provides standard BMPs recommended by NOAA. Please select any BMPs that will be implemented:*

☒	NMFS Southeast U.S. Marine Mammal and Sea Turtle Viewing Guidelines[2]
☒	NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions[3]
☒	NMFS Measures for Reducing the Entrapment Risk to Protected Species[3]
☒	NMFS Vessel Strike Avoidance Measures and Reporting for Mariners[3]
☐	Reproducing and posting outreach signs: Dolphin Friendly Fishing Tips sign, Don't Feed Wild Dolphins sign[3]

If not listed above, please describe any additional BMPs or conservation measures that may be be implemented for marine mammals.
Dolphins would be monitored during dredging activities following the same protocols used for sea turtles and manatees. Specifically: (a) If dolphins come within 50 ft. of active dredging and are not just traveling through the area (e.g. remaining within 50 ft. to forage), dredge operations should not start, or, if dredging has already begun, they should cease until the dolphins are beyond and are not likely to re-enter (i.e., are on a dedicated path away from the 50 ft. area). This is to avoid physical harm from dredge equipment. (b) To avoid perceived physical barriers to dolphins, avoid transversing waterbodies with any floating pipelines from the dredge activities.

L. Bald Eagles

Are bald eagles present in the action area? ☐NO ☒YES

If YES, the following conservation measures should be implemented:

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances, activities conducted at a distance greater than 660 feet of a nest may result in disturbance. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

[2] Documents can be found here: http://sero.nmfs.noaa.gov/protected_resources/outreach_and_education/index.html
[3] Documents can be found here: http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/index.html

Will you implement the above measures? ☐NO ☒YES

If these measures cannot be implemented, then you must contact the Service's Migratory Bird Permit Office.
Texas – (505) 248-7882 or by email: permitsR2MB@fws.gov
Louisiana, Mississippi, Alabama, Florida – (404) 679-7070 or by email: permitsR4MB@fws.gov

M. Request approval for use of NMFS PDCs for this project

Complete this section only if your project qualifies for streamlined ESA consultation under the ESA Framework Programmatic Biological Opinion completed by NMFS on February 10, 2016. To be eligible for streamlined ESA consultation with NMFS, you must implement all Project Design Criteria (PDCs) applicable to your project. Check "yes" for PDC categories that apply to the proposed project, and request PDC checklist from NMFS.

NO	YES	ACTIVITY
☐	☐	**Oyster Reef Creation and Enhancement**
☐	☐	**Marine Debris Removal**
☐	☐	**Construction of Living Shorelines**
☐	☐	**Marsh Creation and Enhancement**
☐	☐	**Construction of Non-Fishing Piers**

N. Submitting the BE Form

We request that all BE forms and consultation materials be placed on Sharepoint for review. Upon receipt, we will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If modifications or additional information is necessary, we will work with you until the Biological Evaluation form is considered complete. Once complete, we will use the Biological Evaluation form to initiate appropriate consultations.

Questions may be directed to:

NMFS ESA § 7 Consultation
Christy Fellas, National Oceanic Atmospheric Administration
Email: Christina.Fellas@noaa.gov
Phone: 727-551-5714

USFWS ESA § 7 Consultation
Erin Chandler, Department of the Interior
Email: Erin_Chandler@fws.gov
Phone: 470-361-3153

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